

## CLAIMS

1. An article of manufacture for use in bleaching a person's teeth, comprising:
  - a substantially solid adhesive activation composition having increased adhesiveness to teeth when moistened by saliva or water, said adhesive activation composition comprising at least one tooth adhesion agent that at least partially contributes to said increased adhesiveness to teeth and at least one bleaching agent activator; and
  - a dental bleaching gel, adjacent to said adhesive activation composition, comprising at least one dental bleaching agent, at least one tackifying agent, and a liquid or gel carrier.
2. An article of manufacture as defined in claim 1, said adhesive activation composition having a tray-like configuration comprising a least two sidewalls that define a trough within which the dental bleaching gel resides prior to use.
3. An article of manufacture as defined in claim 2, said adhesive activation composition having a horse-shoe configuration so as to approximate the curvature of a person's dental arch.
4. An article of manufacture as defined in claim 2, said adhesive activation composition having a substantially straight longitudinal profile prior to use so that longitudinal curving is required when the article is placed over a person's teeth.

5. An article of manufacture as defined in claim 2, at least a portion of said trough having a cross section that is approximately U-shaped, V-shaped, L-shaped, rectangular, or trapezoidal.

6. An article of manufacture as defined in claim 1, said adhesive activation composition comprising a strip or patch prior to use.

7. An article of manufacture as defined in claim 1, wherein said adhesive activation composition is designed so as to approximately terminate at or near a person's gingival margin during use.

8. An article of manufacture as defined in claim 1, said tooth adhesion agent within said adhesive activation composition comprising at least one of polyvinyl pyrrolidone (PVP), carboxypolymethylene, polyethylene oxide, polyacrylic acid, copolymer of polyacrylic acid, polyacrylate, polyacrylamide, copolymer of polyacrylic acid and polyacrylamide, PVP-vinyl acetate copolymer, carboxymethylcellulose, carboxypropylcellulose, polysaccharide gum, or protein.

9. An article of manufacture as defined in claim 1, said bleaching agent activator comprising at least one of a base, a metal, a metal compound, or an enzyme.

10. An article of manufacture as defined in claim 1, said bleaching agent activator having a concentration in a range of about 0.01% to about 20% by weight of said adhesive activation composition.

11. An article of manufacture as defined in claim 1, said adhesive activation composition further comprising at least one humectant.

12. An article of manufacture as defined in claim 1, wherein said adhesive activation composition has a cross-sectional thickness in a range of about 0.1 mm to about 0.5 mm.

13. An article of manufacture as defined in claim 1, wherein said adhesive activation composition has a cross-sectional thickness in a range of about 0.5 mm to about 2 mm.

14. An article of manufacture as defined in claim 1, wherein said adhesive activation composition has a cross-sectional thickness in a range of about 2 mm to about 3 mm.

15. An article of manufacture as defined in claim 1, said adhesive activation composition further comprising at least one member selected from the group comprising dental desensitizing agents, remineralizing agent, antimicrobial agents, antiplaque agents, and anti-tartar agents.

16. An article of manufacture as defined in claim 1, said dental bleaching gel being substantially anhydrous prior to use.

17. An article of manufacture as defined in claim 1, said dental bleaching gel further comprising at least one member selected from the group comprising dental desensitizing agents, remineralizing agent, antimicrobial agents, antiplaque agents, and anti-tartar agents.

18. An article of manufacture as defined in claim 1, said dental bleaching agent having a concentration in a range of about 1% to about 60% by weight of said dental bleaching gel.

19. An article of manufacture as defined in claim 1, said dental bleaching agent having a concentration in a range of about 3% to about 40% by weight of said dental bleaching gel.

20. An article of manufacture as defined in claim 1, said dental bleaching agent having a concentration in a range of about 5% to about 30% by weight of said dental bleaching gel.

21. An article of manufacture as defined in claim 1, said tackifying agent comprising at least one of polyvinyl pyrrolidone (PVP), carboxypolymethylene, polyethylene oxide, polyacrylic acid, copolymer of polyacrylic acid, polyacrylate, polyacrylamide, copolymer of polyacrylic acid and polyacrylamide, PVP-vinyl acetate copolymer, carboxymethylcellulose, carboxypropylcellulose, polysaccharide gum, or protein.

22. An article of manufacture as defined in claim 1, further comprising a barrier layer comprising a moisture-resistant material adjacent to an outer surface of said adhesive activation composition so as to provide a barrier to saliva or moisture during use.

23. An article of manufacture as defined in claim 22, said barrier layer being flexible so that it will readily conform to the shape of a person's teeth when in use.

24. An article of manufacture as defined in claim 22, said barrier layer comprising at least one of wax, metal foil, paraffin, ethylene-vinyl acetate copolymer, ethylene-vinyl alcohol copolymer, polycaprolactone, polyolefin, polyethylene, high density polyethylene, low density polyethylene, ultra-low density polyethylene, polypropylene, polytetrafluoroethylene, polyester, polycarbonate, polyurethane, polyamide, or polyesteramide.

25. An article of manufacture as defined in claim 22, said barrier layer having a cross-sectional thickness in a range of about 0.025 mm to about 1.5 mm.

26. An article of manufacture as defined in claim 22, said barrier layer having a cross-sectional thickness in a range of about 0.05 mm to about 1 mm.

27. An article of manufacture as defined in claim 1, further comprising a sealed package within which said adhesive activation composition and bleaching gel are sealed prior to use.

28. A kit for use in desensitizing a person's teeth comprising a plurality of said articles of manufacture according to claim 1.

29. A kit as defined in claim 28, wherein at least some of said articles of manufacture are stacked and internested together.

30. A kit as defined in claim 28, further comprising a barrier layer, or a material used to make a barrier layer, that is positioned adjacent to an outer surface of the adhesive activation composition just prior to use.

31. A method for bleaching a person's teeth comprising obtaining an article of manufacture according to claim 1 and placing it over at least a portion of the person's teeth for a desired time period.

32. An article of manufacture for use in bleaching a person's teeth, comprising:  
a barrier layer comprising a moisture-resistant material;

a substantially solid adhesive activation composition, adjacent to said barrier layer, having increased adhesiveness to teeth when moistened by saliva or water, said adhesive activation composition comprising at least one tooth adhesion agent that at least partially contributes to said increased adhesiveness to teeth and at least one bleaching agent activator; and

a dental bleaching gel, adjacent to at least one of said adhesive activation composition or barrier layer, comprising at least one dental bleaching agent, at least one tackifying agent, and a liquid or gel carrier.

33. An article of manufacture as defined in claim 32, said barrier layer having a tray-like configuration comprising a least two sidewalls that define a trough within which the dental bleaching gel resides prior to use.

34. An article of manufacture as defined in claim 33, at least a portion of said trough having a cross section that is approximately U-shaped, V-shaped, L-shaped, rectangular, or trapezoidal.

35. An article of manufacture as defined in claim 33, said barrier layer being initially horseshoe shaped prior to use so as to at least approximately conform to a person's dental arch with minimal longitudinal shaping.

36. An article of manufacture as defined in claim 33, said barrier layer having a substantially straight longitudinal profile prior to use so that longitudinal curving is required when placed over a person's teeth.

37. An article of manufacture as defined in claim 32, said barrier layer being flexible so as to readily conform to the shape of a person's teeth during use.

38. An article of manufacture as defined in claim 32, said barrier layer comprising at least one of wax, metal foil, paraffin, ethylene-vinyl acetate copolymer, ethylene-vinyl alcohol copolymer, polycaprolactone, polyolefin, polyethylene, high density polyethylene, low density polyethylene, ultra-low density polyethylene, polypropylene, polytetrafluoroethylene, polyester, polycarbonate, polyurethane, polyamide, or polyesteramide.

39. An article of manufacture as defined in claim 32, said barrier layer comprising a customized dental tray.

40. An article of manufacture as defined in claim 32, said barrier layer comprising a thin, flexible membrane having no predefined shape, said adhesive layer having sufficiently rigidity so as to at least partially contribute to maintaining said barrier layer in the shape of a dental tray prior to use.

41. An article of manufacture as defined in claim 32, said tooth adhesion agent within said adhesive activation composition comprising at least one of polyvinyl pyrrolidone



(PVP), carboxypolymethylene, polyethylene oxide, polyacrylic acid, copolymer of polyacrylic acid, polyacrylate, polyacrylamide, copolymer of polyacrylic acid and polyacrylamide, PVP-vinyl acetate copolymer, carboxymethylcellulose, carboxypropylcellulose, polysaccharide gum, or protein.

42. An article of manufacture as defined in claim 32, said bleaching agent activator within said adhesive activation composition comprising at least one of a base, a metal, a metal compound or an enzyme.

43. An article of manufacture as defined in claim 32, said bleaching agent activator within said adhesive activation composition having a concentration in a range of about 0.01% to about 20% by weight of said adhesive activation composition.

44. An article of manufacture as defined in claim 32, said adhesive activation composition further comprising at least one member selected from the group comprising dental desensitizing agents, remineralizing agent, antimicrobial agents, antiplaque agents, and anti-tartar agents.

45. An article of manufacture as defined in claim 32, said dental bleaching gel further comprising at least one member selected from the group comprising dental desensitizing agents, remineralizing agent, antimicrobial agents, antiplaque agents, and anti-tartar agents.

46. An article of manufacture as defined in claim 32, said dental bleaching gel positioned adjacent to said barrier layer rather than said adhesive composition so as to prevent or inhibit contact between the bleaching agent activator and bleaching gel prior to use.

47. A kit for use in bleaching a person's teeth comprising a plurality of articles of manufacture according to claim 32.

48. A method for bleaching a person's teeth comprising obtaining a dental bleaching device comprising the barrier layer, adhesive activation composition, and dental bleaching gel of claim 32 and then placing said dental bleaching device over at least a portion of the person's teeth for a desired time period.

49. A method of manufacturing an article for use in bleaching teeth, comprising:

mixing together a tooth adhesion agent, a solvent, and a bleaching agent activator to form an adhesive activation composition intermediate;

removing at least a portion of said solvent from said adhesive activation composition intermediate so as to form a substantially solid adhesive composition having increased adhesiveness to teeth when moistened with saliva or water; and

placing a dental bleaching gel adjacent to the adhesive layer.

50. A method as defined in claim 49, further comprising placing or forming a barrier layer adjacent to said adhesive activation composition.

51. A method of manufacturing an article for use in bleaching teeth, comprising:

mixing together a tooth adhesion agent, a solvent, and a bleaching agent activator to form an adhesive activation composition intermediate;

placing the adhesive activation composition intermediate adjacent to a barrier layer;

removing at least a portion of said solvent from said adhesive activation composition intermediate so as to form a substantially solid adhesive composition having increased adhesiveness to teeth when moistened with saliva or water; and

placing a dental bleaching gel adjacent to at least one of the adhesive layer or barrier layer.